Codian ISDN Gateway

ISDN GW 3200 Series

Getting Started

Codian

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Table of contents

General information 3
- About the ISDN gateway 3
- Package contents 3
- Port and LED location 3
- LED behavior 4

Connecting the ISDN gateway 6
- Before you start 6
- Your ISDN connection 6
- Step one: Connect power 6
- Step two: Connect to Ethernet Port A 6
- Step three: Connect to the ISDN ports 7

Initial configuration 9
- Step one: Connect to the console port 9
- Step two: Configure Ethernet Port A settings 9
- Step three: Assign an IP address to the ISDN gateway (optional) 10
- Step four: Discover the IP address of the ISDN gateway 10

Configuring the ISDN gateway 11
- Step one: Log in to the ISDN gateway 11
- Step two: Set up the ISDN interfaces 11
- Step three: Configure the dial plan 12

Configuring the MCU 13
- Adding the ISDN gateway 13
- Configuring endpoints 13

Making calls 14
- Calling in by ISDN 14
- Calling out by ISDN 14

Troubleshooting and technical support information 15
- Calls fail to complete 15
- Using the event log to help solve a problem 15
- Contacting technical support 15

Pin outs 16

Operating guidelines 18

Safety warnings 18

General information

About the ISDN gateway

The ISDN GW 3200 series is a range of high performance video gateways which enables ISDN network connectivity for the Codian IP-based video infrastructure products as well as IP-based endpoints.

Package contents

The following items are included with the ISDN gateway. Verify that you have these items before installing the device:

- Codian ISDN GW 3200 series device
- Console cable (blue)
- ISDN cables (known as Y cables): one with GW 3210 and GW 3220, two with GW 3240 and four with GW 3280
- Two RJ45 to RJ45 in-line couplers (black) per supplied Y cable
- Power cable
- Rack mounting kit

Port and LED location

Figure 1 shows the position of ports on the ISDN gateway.

Figure 1: ISDN GW 3200

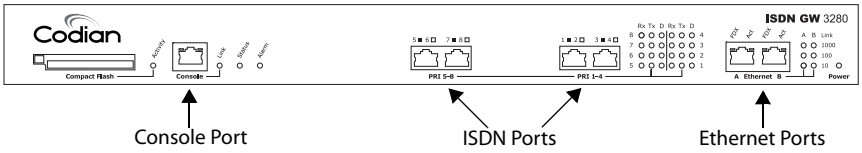
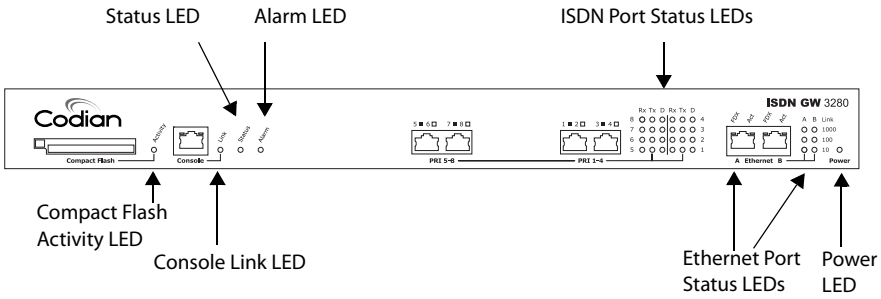


Figure 2 shows the position of LEDs on the front panel of the ISDN gateway.

Figure 2: Position of LEDs



LED behavior

Table 1 describes the behavior of the LEDs.

Table 1: ISDN gateway LED behavior

LED	Color	Indicates
Compact Flash Activity	Flashing green	One of: ▸ the ISDN gateway is booting ▸ a configuration change has been made ▸ the configuration is being transferred by FTP
Console Link	Green	A PC is connected to the console port
Status	Green	The ISDN gateway is operating normally
Alarm	Red	The ISDN gateway is booting or has developed a fault, for example: ▸ temperature is outside normal limits ▸ fan failure ▸ battery failure of the internal clock Refer to the web interface for more information about the problem (go to **Status > Health**)

Table 1: ISDN gateway LED behavior (continued)

LED	Color	Indicates
ISDN Port Status, for each ISDN port:		
Rx	Green	There is at least one active call from this port. Data is currently being received on this port
Tx	Green	There is at least one active call from this port. Data is currently being transmitted on this port
D	Green	Layer 2 connectivity has been achieved with the ISDN network from this port. This means that D-channel signalling has been established with the network
Ethernet Port Status, for each Ethernet port:		
FDX	Green	The link has been negotiated as a full-duplex link
Act	Green	Packets are being transmitted on this port
Link	Green	The speed of the link from this port, which is either 10, 100, or 1000 Mbps
Power	Blue	The ISDN gateway is receiving power

Connecting the ISDN gateway

Before you start

Before installing the ISDN GW 3200 (ISDN gateway), refer to the Operating guidelines on page 18 and Safety warnings on page 18.

Your ISDN connection

To maintain connectivity with the ISDN network, the ISDN gateway must be connected to the ISDN network via an in-building NTU (Network Termination Unit) or CSU (Channel Service Unit).

The ISDN gateway only supports ISDN with 64k channel size.

Check with your network provider to ensure that your incoming ISDN PRI line has been terminated in an NTU/CSU. If it has not, then seek their advice regarding the provisioning of such a device. Do not connect the ISDN gateway directly to an external ISDN line.

Step one: Connect power

Connect the power connector on the rear of the unit to the power supply using the supplied power cable. (There is no On/Off switch.)

Step two: Connect to Ethernet Port A

Connect an Ethernet cable from Ethernet Port A to an Ethernet switch (rather than a hub, to minimize interference from other devices on the network). The Ethernet port is a 10/100/1000 Mbps auto-sensing connection.

Only connect to Ethernet Port A. Ethernet Port B is reserved for future expansion; do not connect anything to Ethernet Port B.

Step three: Connect to the ISDN ports

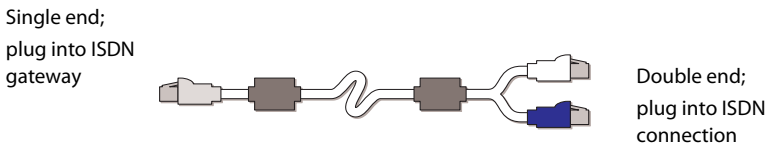
The ISDN gateway uses high-density ISDN connectors to provide two ISDN interfaces on a single RJ45 connector. This high-density connector means that you must use the supplied Y cable (see Figure 3) to connect the ISDN gateway to your ISDN connection.

You must use the Y cable, even if you plan to connect just one of the ISDN interfaces. Using a standard straight-through cable will not work.

The Codian ISDN gateway may not be compliant with EMC (Electromagnetic Compatibility) standards if you use a cable other than the supplied Y cable.

For information about the behavior of the ISDN port LEDs, refer to Table 1, ISDN gateway LED behavior, on page 4.

Figure 3: Y cable



1 Connect the single end of the supplied Y cable to the port labelled 1 2 on the ISDN gateway.

2 Connect the white and blue plugs on the double end of the Y cable to your ISDN connection. If you have a GW 3210, connect only the white plug (leaving the blue plug unconnected); if you have a GW 3220, connect the white plug and the blue plug to your ISDN connection.

For D-channel signalling to be established, the ISDN gateway must have found and synchronized with the ISDN network clock. In some installations, you may have to explicitly request your ISDN provider to enable the network clock before the link will be established.

Connecting further ISDN ports

If you have a model GW 3240 or GW 3280, you will have been supplied with more than one Y cable. Connect each further cable following the method outlined above.

Extending the Y cable

You have been supplied with two RJ45 to RJ45 in-line couplers per Y cable. Use these if you need to extend the Y cable to reach your ISDN connection. If you need to do this, connect the coupler at the double end of the Y cable and extend using a standard (8-core) straight-through cable. For example, in the case of a GW 3210, connect the coupler to the white plug at the double end of the Y cable, and a straight-through cable between the in-line coupler and the ISDN connection.

Initial configuration

Step one: Connect to the console port

1 Ensure power is connected to the ISDN gateway and the Status LED is green.

2 Connect the console port of the ISDN gateway to the serial port of your PC using the blue RJ45 to DB9 cable supplied.

3 Use a serial terminal program, such as HyperTerminal, to connect to the ISDN gateway. Set your terminal software to the following settings:

- Baud rate: 38400
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

4 Press Enter and the following command prompt appears on the terminal:
`ISDN-GW:>`

Step two: Configure Ethernet Port A settings

The default setting for the ISDN gateway Ethernet ports is auto-sensing mode. If the switch ports to which you connect the ISDN gateway are not also set to auto-sensing mode, then you need to configure the ISDN gateway Ethernet ports to use the same speed and duplex mode.

Only connect to Ethernet Port A. Ethernet Port B is reserved for future expansion; do not connect anything to Ethernet Port B.

Both ends of the Ethernet connection must be configured in the same way. For example, either configure both ends of the link to be auto-sensing or configure both ends to operate at the same speed and duplex.

To establish a 1000Mbps connection, both ends of the link must be configured as auto-sensing.

1 To configure Ethernet Port A, enter the following for auto-sensing mode:
`ethertype auto`
or to configure a speed and duplex, use the following command:
`ethertype <10|100> <half|full>`

2 To display the current configuration and status of the Ethernet ports, enter:
`status`

For example, to configure a full-duplex 100Mbps link, enter:

`ethertype 100 full`

To establish a 1000Mbps connection, both ends of the link must be configured as auto-sensing.

Step three: Assign an IP address to the ISDN gateway (optional)

The default setting for the ISDN gateway is to use DHCP to obtain an IP address. You can assign a static IP address if you prefer or if a DHCP server is not available.

If you want the IP address of the ISDN gateway to be assigned by your DHCP server, do not complete this step.

- To assign a static IP address, use the following command:
`static <IP address> <netmask> <default gateway address> <DNS server address>`

If you do not have a DNS server, you must use the IP address of your default gateway in place of the DNS server IP address.

For example, to assign an address of 192.168.1.2 where the default gateway is at 192.168.1.1, enter:

`static 192.168.1.2 255.255.255.0 192.168.1.1 192.168.1.1`

Step four: Discover the IP address of the ISDN gateway

1 To display the current status of the IP address, enter: **`status`**
If you have DHCP enabled on your network and you are allowing the ISDN gateway to acquire its address using DHCP, the IP address that has been acquired by Ethernet Port A will be shown; if you have assigned a static IP address, that is the address that will be shown.

2 Make a note of the IP address. You will use this to access the web interface of the unit.

Configuring the ISDN gateway

Step one: Log in to the ISDN gateway

All administration of the ISDN gateway is performed via the web interface. To log in to the ISDN gateway:

1 Use your browser to navigate to the IP address of the ISDN gateway (to discover the IP address, refer to the previous section).

2 Click **Change log in** and enter the user name **admin** with no password.

Codian recommends that you change the admin account to use a password as soon as possible. To do that, go to **Users**, click the **admin** link, and provide the required user information.

Step two: Set up the ISDN interfaces

1 In the web interface, go to **Settings > ISDN**.

2 Select the **ISDN interface type** to match that of your installation; E1 is typically used in the UK and mainland Europe, T1 (USA and Canada) in North America, and T1(Japan) in Japan.

3 Complete the other settings as required by your network, referring to the online help for further information.

4 Click **Apply changes** to save any changes you have made to the configuration.

5 Restart the ISDN gateway (this is only necessary if you changed the configuration). To do this:

   i Go to **Settings > Shutdown**, and click **Shut down ISDN GW**.

   ii Confirm that you want to shut down the ISDN gateway.

   iii Click **Restart ISDN GW**.

6 When the ISDN gateway has restarted, log in to the web interface again, and go to **Settings > ISDN ports**.

7 Complete the settings for ISDN Port 1 as required by your network, referring to the online help for further information. Note that all ISDN ports on the ISDN gateway are enabled by default.

8 Click **Apply changes** to save your configuration changes to the ISDN port.

9 If required, configure another ISDN port by selecting the port number from the numbered links at the top right of the ISDN port configuration page.

Step three: Configure the dial plan

The default behavior of the ISDN gateway is to reject all calls. You must configure a dial plan to allow permitted calls to be placed.

There are a number of different ways in which you can use the dial plan. For example, you can use the dial plan to link specific bandwidths to certain prefixes, thereby enabling users to use the correct bandwidth for an IP to ISDN call. You can also use the dial plan to enable the ISDN gateway to join incoming ISDN calls to the correct conference on an MCU. These dial plan configurations are explained in greater detail and with supporting examples in the online help accessible from the web interface.

The simplest configuration is to create a dial plan that will:

- connect any IP to ISDN call that has been routed to the ISDN gateway to the number that the caller has dialed (using any free enabled port)
- connect any ISDN to IP call to the auto attendant of your MCU

To do this:

1 In the web interface, go to **Dial plan > IP to ISDN** and click **Add rule**.
2 For **Condition**, select **Match any called number**.
3 For **Action**, select **Call with the original called number**.
4 Leave the other values unchanged. Click **Add rule** to add the rule to the dial plan.
5 Now go to **Dial plan > ISDN to IP**, and click **Add rule**.
6 For **Condition**, select **Match any called number**.
7 For **Action**, select **Call this number** and enter the IP address of your MCU.
8 Leave the other values unchanged. Click **Add rule** to add the rule to the dial plan.

Configuring the MCU

If you are connecting the ISDN gateway to a Codian MCU, refer to this section for information.

Adding the ISDN gateway

To simplify the making of outgoing calls by ISDN, you can configure your MCU. To do this:

1 Using your web browser, navigate to the web interface of the MCU.
2 Go to **Gateways**.
3 Click **Add new H.323 gateway**.
4 Enter a name for the gateway, such as *Codian ISDN gateway*, and specify the IP address of the ISDN gateway. Leave all other fields unchanged.
5 Click **Add H.323 gateway**.

Configuring endpoints

The simplest way to call ISDN endpoints from your MCU using the ISDN gateway is to define pre-configured endpoint definitions for any endpoints you wish to call.

To define pre-configured endpoint definitions:

1 Using your web browser, navigate to the web interface of the MCU.
2 Go to **Endpoints**.
3 Click **Add H.323**.
4 Enter a name for the endpoint, such as *CEO ISDN phone*.
5 In the **Address** field, type the phone number of the endpoint.
6 Select the gateway you have just added for **H.323 gateway**. Leave all other fields unchanged.
7 Click **Add endpoint**.

You can now call out to this endpoint as described in the next section.

Making calls

When you have set up the Codian ISDN gateway, and MCU if appropriate, you can make calls via the ISDN network.

Calling in by ISDN

If you have configured the dial plan as described in Step three: Configure the dial plan on page 12, endpoints calling the telephone number of the ISDN gateway will, when the call is completely established, be forwarded to the auto attendant of the MCU. From here they may use the Far End Camera Controls (FECC) of their endpoint to navigate the menus and join conferences as normal.

Calling out by ISDN

To call an endpoint connected by ISDN, invite it into a conference using the pre-defined endpoint. To do this on the Codian MCU:

1 Using your web browser, navigate to the web interface of the MCU.

2 Go to **Conferences** and select the conference you are interested in by clicking its name.

3 Click **Add participant** and select the ISDN endpoint from the list of pre-configured endpoints. Click **Add selected**.

A call will be placed through the ISDN gateway to the desired endpoint.

Troubleshooting and technical support information

Refer to this section if you are experiencing difficulties with the ISDN gateway. Ensure that you have followed the instructions in this guide when installing and configuring the ISDN gateway.

Calls fail to complete

If outgoing calls fail to complete, check that you have configured the MCU and ISDN gateway correctly, paying particular attention to the number you are trying to call. Remember that endpoints may be busy when you call them.

Using the event log to help solve a problem

Unless you are experiencing a problem, all event logging sources should be set to the default, which is **Errors, warnings and information**. For more information about configuring the event log, refer to the online help accessible from the web interface.

You can use the event log to produce debugging information to assist Codian technical support in solving your problem. However, Codian recommends that you only alter the setting of the event log under the guidance of Codian technical support representatives. In particular, it is not recommended that you indiscriminately turn on event logging sources.

Contacting technical support

If you need to contact Codian technical support, send an email detailing the problem to:

support@codian.com

Include the following information in the email:

- the serial number and product model number (for example: ISDN GW 3210) of the ISDN gateway
- the software build number (to find this, in the web interface, go to **Status > General**)
- where you purchased the ISDN gateway
- your contact telephone number

Pin outs

The pin assignments for the RJ45 ISDN ports on the ISDN gateway are shown in Table 2:

Table 2: Pin assignments for ISDN ports

Pin number	Signal
1	Port 2 Tx+
2	Port 2 Tx-
3	Port 1 Tx+
4	Port 1 Rx+
5	Port 1 Rx-
6	Port 1 Tx-
7	Port 2 Rx+
8	Port 2 Rx-

Use the supplied Codian Y cable to ensure compliance with EMC standards.

The following tables show the pin assignments for the double end of the supplied Codian Y cable. Pin assignments for the white end are shown in Table 3, and for the blue end in Table 4.

Table 3: Pin assignments for the white end of the Y cable

Pin number	Signal
1	Port 1 Rx-
2	Port 1 Rx+
3	Unassigned
4	Port 1 Tx-
5	Port 1 Tx+
6	Unassigned
7	Unassigned
8	Unassigned

Table 4: Pin assignments for the blue end of the Y cable

Pin number	Signal
1	Port 2 Rx-
2	Port 2 Rx+
3	Unassigned
4	Port 2 Tx-
5	Port 2 Tx +
6	Unassigned
7	Unassigned
8	Unassigned

Operating guidelines

- The unit is for indoor use only
- The unit should be used within the following conditions:
  - Operating environment: 0 to 35° C and 10% to 95% humidity (non-condensing)
  - Non-operating environment: -10 to 60° C
  - Electrical rating: 100-240 VAC 50 to 60 Hz
- Ventilation holes to be kept clear of all obstructions
- The unit to be kept in a dry and clean environment
- Risk of electrical shock if opened. Never operate with cover removed
- No user serviceable parts
- Only trained and qualified personnel should install or replace this equipment
- Rack-mount using provided ears and screws. Note that the maximum weight of the unit is 5.4kg

Safety warnings

- Only trained and qualified personnel should be allowed to install or replace this equipment
- Read the installation instructions before you connect the system to its power source
- Caution: Risk of explosion if internal battery is replaced by an incorrect type. Dispose of used batteries according to local regulations
- Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available
- The plug-socket combination must be accessible at all times because it serves as the main power disconnecting device
- Ultimate disposal of this product should be handled according to all national laws and regulations
- Unplug the power cord before working on this system; it does not have an on/off switch

- Do not operate the unit with the cover removed. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards
- Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals
- Do not work on the system or connect or disconnect cables during periods of lightning activity
- To reduce the risk of electric shock, do not connect safety extra low voltage (SELV) circuits to telecommunications network voltage (TNV) circuits. The console, Ethernet and ISDN ports on the ISDN GW 3200 are SELV interfaces. ISDN lines where they enter the building are usually classified as TNV. These lines should never be connected directly to the ISDN GW 3200. Use an isolating device such as a Network Termination Unit (NTU) or Channel Service Unit (CSU) between off-premise ISDN lines and the ports on the ISDN GW 3200
- This equipment is to be installed and maintained by appropriately qualified personnel as defined in IEC 60950-1 clause 1.2.13.5 or as required by local regulations
- To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:
  - This unit should be mounted at the bottom of the rack if it is the only unit in the rack
  - When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack
  - If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack